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hereafter visit the plains, since the bite of the rabid skunk has proved fatal to man in more than nine cases out of ten, and there are more than fifty fatal cases on record. In this connection may be mentioned another danger which must be incurred by the collector of insects upon the plains. I refer to the bite of the rattlesnake, which venomous reptile abounds in Western Kansas and Eastern Colorado, and was encountered nearly every day by some member of our expedition.

REMARKS CONCERNING TWO DIVISIONS OF INDIANS INHABITING ARIZONA, NEW MEXICO, UTAH, AND CALIFORNIA.

BY DR. EDWARD PALMER.

HAVING traveled extensively in that part of the United States acquired from Mexico, and having examined the so-called ancient graves and mounds, as well as studied the Indians now living in the same region, I have come to the conclusion that this region was formerly inhabited by two divisions or classes of Indians, distinguishable by their modes of burial—one burning, the other inhuming, the corpses—and by their dwellings and domestic arts. In the same region are to be found graves which do not belong to the Indians now living there, and containing either the bodies or ashes of human beings whose epoch we have no means of determining.

The Indians found in the city of Mexico, and said by the Spanish historians to offer up human sacrifices to their gods, were only observing their usual custom of burning their dead. The Spaniards killed them in great numbers, and the Indians in burning the dead afforded their enemies, the Spaniards, the grounds for notions out of which to make religious capital. So the priests and officers magnified this simple custom, and by declaring the Indians to be idolaters and sacrificers of human beings they did them a grave injustice.

The Spaniards in their conquests always kept in view the maxim that the means justify the end. To ascribe the burning of the dead to offering up human sacrifices to gods was sufficient to gain the desired object, as the church would be aroused at once to send out missionaries to convert the heathen and establish religious orders among them.

Concluding that the Indians found living in the city of Mexico at the time of the Spanish conquest were Aztecs or crema-

tionists, if we go to that part of the United States formerly composing the frontier provinces of Mexico we find at this day pure Aztecs or cremationists; for those of the same race in the thickly settled and richer portions of Mexico have by one means or another been compelled to change from burning to burying their dead. While in Arizona we have the Apache, Mojave, Yuma, and Cocopah tribes, and in Nevada the Digger, which burn their dead, in California the Indians have so changed by church influence that nearly all bury their dead according to the rules of the Catholic church instead of burning the dead. Part of the Daigano tribe, after the expulsion of the Jesuits from Mexican territory, moved to the border of Lower California, and have gone back to all their old customs, burning their dead, and are now Indians in every sense; that is, they are free and untrammelled by any encroachments of the white man or his fashions.

The other division of Mexican Indians were those who buried their dead. They had only to drop their own mode of disposal of the dead and adopt that of the Catholic church. In order to observe the Indians of this division with customs unchanged, we must visit the Puma of Arizona, the Moqui and the Yuma Indians of New Mexico, for the other bands of this division adopt the Catholic mode of burial.

The cities and dwellings of the two classes of people in the country at the time of the Spanish conquest must have greatly differed: Yet the Spaniards called them all Aztecs. In this there seems to have been a design. The dwellings and cities were so exaggerated as to size and importance that in reading the reports sent to the Spanish court and the Pope one is led to conclude that they were of a grandeur and magnificence beyond all conception. But for Indians at that day or this to live in such a high degree of civilization is out of the question. Neither the ruins of former cities nor the style of the present buildings of their descendants supports those extravagant assertions. The statements of the Spanish priests were sufficient to make the Spanish government proud of its acquisitions, and in return its officers and the representatives of the church received great honors and rewards. The Spanish historians of the conquest of the city of Mexico tell us that the city was built on a marsh or wet land; for they say that ditches were cut to drain the city, and boats run up and down them. But how could magnificent buildings of great height, built of large blocks of

stone, be supported on a swamp, and how could they transport such large masses from the distance they had to be brought, without draught animals, — for they had no horses until the Europeans entered the country. Engineers have decided, after careful examinations of the foundation of the ancient city of Mexico, that buildings of the size spoken of by the Spaniards could never have been supported upon a marsh, as the foundations of the ancient city prove to have been; besides, if they did exist, some fragments would be found, as they could not be so entirely obliterated that not even a vestige would be left unless the pieces of sculpture and the calendar stone, which have been dug up in the city, may be considered to have belonged to the ancient city of Mexico. They may have been the ornaments of a Toltec building, brought by the Spaniards from some of the large Toltec towns with a view of sending them to Spain to give color to their reports, but owing to the difficulty of their transportation to the sea-coast at that day were left to be cast away, and resurrected years after as Aztec remains. Now, taking this view of the subject, we are led to the conclusion that the ancient city of Mexico was a collection of small one or two story houses made of adobe or sun-dried bricks, or in some cases possibly built of upright poles with sticks braced between and mud plastered over them. This kind of a house is frequently met with at this day, for round poles, sticks, and straw are used with a covering of clay for a roof. The people were not to be despised for living in these kinds of dwellings; their neighborhood afforded no other building materials, and their descendants of to-day live in houses made of like materials. Indeed, what else could the Apache, Mojave, Yuma, and Cocopah Indians use so easily and quickly as earth and poles, sticks and straw? Houses built of these materials answered all their wants.

The second division of Indians, those that buried their dead, were the Toltecs, neighbors to the Aztecs or cremationists. The dwellings of the former were superior to the latter, being confounded with and called Aztec. The Spanish conquerors reported these habitations as magnificent, in order to magnify their conquests. As superior as were the buildings of the Toltecs over those of the Aztecs, yet they were not of the grandeur reported by Spanish historians. Considering the Pimo Indians of Arizona, Moqui, Zuni, and the Rio Grande Indians of New Mexico, to be of the Toltec division, with the exception of the Pimos they live

in three-story buildings, — several families in a building, — and form a marked contrast to the Aztec buildings of to-day.

The ruins in the same country convey the idea that a similar kind of buildings inhabited by this class of people existed many years ago. The Pimos formerly lived in large buildings of several stories, and a good many persons in a building, but the Spaniards entered the country, and waged war with their Aztec neighbors, the Apaches; at the same time the Pimos acquired horses and arms from the Spanish, which also assisted them in coping with their enemies. The Apaches being thus placed in a condition to leave their communal dwellings, their lands became worn out. They now settled on a new tract of land close to their old homes, building small houses suited to each family. The reason that Indians live in communities is for better protection from their enemies. There seem to have been in the past as in the present periods constant war between the two divisions of Indians. The Aztec sbeing the most numerous and warlike and without fixed habitations, were an enemy to be feared, very difficult to conquer, and so tenacious of their freedom that the priests had to resort to force as well as to persuasion before any could be gathered into the church fold.

The Toltecs, being settled in communities in order to protect themselves from the Aztecs, were more easily influenced by the priests, and now most of them have adopted more or less of the Catholic religion. Heretofore the pottery found not only in the ruins and mounds of the country under consideration, but that scattered on the surface in fragments, has been considered by writers as the workmanship of the Aztecs; but the fact is that formerly, as at the present time, this pottery is made by the Toltecs, or burying Indians, and it is identical with that made by the same division of Indians to this day; while the Aztecs make a very rude class of pottery, which gives the impression that they may have borrowed the art of pottery-making from their Toltec neighbors. It is rough and of inferior ornamentation. The Aztec is superior to his Toltec neighbor in the art of warfare, and is a more successful hunter; on the other hand, the Pueblo or Toltec surpasses him in the architectural magnificence of his dwellings and in his superior mode of tilling the soil, and also in his systematic form of government. The advent of Europeans, the acquisition of horses, the establishment of Catholic missions, and the introduction of fire-arms among the Indians were no doubt the cause of most, if not all, of the modern changes

wrought among them. Those gaining horses and arms were enabled to wage war against their enemies. The church, being in harmony with the military force of the country during the Spanish and Mexican occupancy of the same, would send out a force of soldiers or conquered Indians, with horses and arms, to war upon the different Indians who were considered enemies, killing the men and bringing in the women and children, who were baptized, and thenceforth lost their tribal relations. Great numbers were thus gathered around missions, which so weakened various tribes that they would unite so as to be able to cope with their common enemies, the church or an Indian tribe. Both divisions suffered by like causes; and when a band of each of the divisions united, the customs of one would give way to the adoption of those of the other, or each would carry out the customs of both according to inclination. For instance, the bands of Paiutes will sometimes burn, at others bury, their dead, indicating that they are composed of both divisions of Indians. Or a band of each of these divisions of Indians may live side by side for mutual protection, and gradually adopt each other's customs, as is the case with the Maricopah Indians of Arizona, who soon after the Mexican war removed alongside of the Pimo Indians, for protection. Now they have nearly given up their custom of burning the dead, and adopted the custom of the Pimos, burying the dead. They have also improved in the art of making baskets and pottery, so that they can make an article equal to the Pimos.

It must be evident that the nature of the country which is occupied by a nation influences the manners, habits, and intelligence of the people. The ever-craving appetites of life, especially that of hunger, operating upon each individual cannot fail to give direction to his inventive habits, determine his pursuits, and impress upon him a character for all time. If the soil will yield grain or roots, or the rivers a plenty of fish, or if the mountains, valleys, and prairies are stocked with game, the course of an Indian's life day after day is thereby established permanently, for the wants of nature compel him to one fixed system of procuring food. The food question being all-powerful and not to be pretermitted, he is forced to become a hunter, a fisherman, or root-digger, in accordance with the nature of the country he occupies. Varied are the conditions of the soil and climate, as, for instance, that about the Moqui towns, which is so sandy and dry that they sow their seed so that it germinates in time to have the advantages of summer rains. All must stay

close to their crops to keep off rats or rabbits ; for if their crops are destroyed, so dry and barren is the surrounding country that it affords few other natural products. On the other hand, the Apache lives in a country of mountains that yield game of all sorts, also seeds, roots, and fruit, with small but rich valleys in which he plants a little corn, wheat, etc. He need not stay close at hand to look after his crop, as nothing destroys it. He can roam and find plenty to eat until his crop is ready to harvest. Thus the Aztec is a wanderer, while the Toltec is a dweller in communities.

In comparing the asserted high civilization of the Indians at the period of the Spanish conquest with their present condition, we see a great difference, which can only be understood after taking into consideration the nature and productions of the soil, their want of domestic animals, cutting-tools, their means of cultivation of soil and their manufactures. One can come to no other conclusion than that the Aztec division in past years was the same as at the present day, with the exception of slight modification caused by wars and mixtures of the two divisions. The men of the Aztec division are lazier than those of the Toltec division, making their females do nearly all the work, while the Toltec takes a greater share of the work upon himself. The Aztec seems to have little power of thinking, makes no progress nor effort to amend his life, is fearless of death, bravely submits to his inevitable fate, and with stolid indifference awaits the swiftly coming doom of his people. The Spaniards made a mistake in confounding the two divisions. The Toltecs being the most industrious had more wealth and better dwellings, and were entitled to much consideration ; but the Spaniards say less of them than of the inferior Aztecs.

The missionaries of the Catholic church, more than all other causes combined, changed the mental and physical condition of the Indians by humbling them to that state of servitude required by them to be members of that church : they broke their native pride, and those who succumbed to that degraded condition of settlers around a mission lost all self-reliance, so that at the expulsion of the Jesuits and the abandoning of the missions they were left helpless, their spirits broken ; those who robbed them of their means of self-reliance had gone ; after their homes and lands had been taken from them those who were left became an easy prey to the avaricious, who easily got them in debt, and then by a law of their own creating ever after held these people and their descend-

ants as peons or slaves, because they were never able to acquire money sufficient to liberate themselves. At the conquest Indians were slaves to the few, but afterwards to the many.

In admitting them to the church they were sprinkled, given a new name, and their hair was cut short. This seems the chief difference between the so-called Christian Indian and the so-called heathen Indian of that part of the country previously indicated.

In several parts of the country under consideration, ruins of dwellings and graves of both divisions of Indians are to be found side by side ; especially is this the case in the valley of the Rio Verde, in Arizona. On the one hand are cave-dwellings, on the other stone buildings, in ruins. Who built up and occupied the caves, and who built and inhabited the stone structures ? The Toltec division, which is proven by the articles found therein ; the Aztecs waging war upon the Toltecs drove them from the valley and took possession. The Aztecs or Apaches claim them to-day, but do not now live in them, because their military enemies all around compel them to keep in the mountains. Recently they were by force compelled to move to reservations.

The Toltec dwellings in former times as now were built of sun-dried bricks or adobes if they were more easily made, but if stone was at hand then that was used, and when not broken into suitable sizes by natural causes stone hammers were used to reduce them. They were laid up regardless of joints ; with either kind of materials they made very good houses. In this valley the Toltecs selected the best natural positions on elevated points, commanding a view of their fields below and of the surrounding country, so that they could not be attacked without a chance of seeing their assailants. The houses were generally of more than one story, and some appear to have been built with three.

In their graves with the dead is to be found pottery, etc., and about the dwellings is to be found much broken pottery of a quality that points to Pimo and Moqui origin.

The caves were used as dwellings during the summer, when they looked after their crops ; but when the autumn set in fever and ague prevailed in the valley, the Indians removed to their houses, built of stone on the bluffs above the caves, safe from ague. The caves are natural excavations in the rocks, and well adapted for Indians' dwellings. The Aztecs drove the Toltecs out of this valley, and built themselves houses of sticks covered with straw and mud, a contrast to the large, airy dwellings in

the caves and the stone buildings on the bluffs. Many caves are to be found in the country, and they appear to have been occupied by the same people, the Toltecs. The Aztecs left many grave-yards, which are distinguishable by piles of stones, generally of a circular form, but with no regularity as to distance apart. In one, particularly, I noticed a number of graves arranged into some degree of order, being in nearly straight rows and several in a row, with stones piled on top lengthwise as if to indicate the height of the deceased when living ; but in both these kinds of graves there was nothing beyond ashes and pieces of human bones placed nearly in the centre.

The ruined cities built of adobes in the provinces of Durango and Chihuahua, Mexico, are like the seven cities of Civola, or towns of the Pueblo Indians of New Mexico, mentioned by the Spanish, who speak of the great wealth of the people living in them ; if they were formerly wealthy they are not now, and the quality of the soil must have changed and more water must have flowed over the surface. These people in early days had no domestic animals, so they must have depended upon the soil of their immediate neighborhood for whatever they possessed. Now it is a dry, sandy waste, and these people can scarcely obtain the plainest living, much less gain the wealth spoken of by the Spaniards.

The people of these seven towns, as all those inhabiting that section of country under consideration were called by the Spaniards Aztecs, despite the wide differences between them. They seemed to have no other idea than to make these people appear great, powerful, and wealthy, in order to gain the favorable consideration of their king, on the one hand ; and to make them to appear great idolaters, offering up human sacrifices to their gods, on the other hand, to please the church. But I have not been able to find any indications of idols among them other than what they have derived from the missionaries. They have many dolls made of clay by the females for the children to play with, and for no other purpose, many of which have been taken away and called gods. I have seen them in museums marked as coming from these people.

The church has tried to impress upon the Indian mind a reverence for a Montezuma whom they were taught would come some day, if they were good, to rule them, and historians say he lived and ruled the city of Mexico. If he had been a great ruler, and the impression had ever been conveyed to Indians by natural

causes that he was to come in the future to rule over them, they would be likely to have a remembrance in some legend, but none of the Indians living in the section under consideration seem to know anything themselves regarding Montezuma. We are also told by historians that the Indians mount their house tops in the mornings and turn towards the east and look for Montezuma; this I have never seen, though I have visited several of their towns. In questioning the oldest, who are the most reliable, regarding Montezuma, in every instance I have been told that Montezuma was a Spanish not an Indian god; they knew nothing of him except what the Spaniards taught them. Among the Daigano Indians of Hot Springs, California, are two that remembered the first missionaries that came among them. They were then about half grown, and remembered well the events of that period, though they are now very old. Among the many questions I asked them was the following: What was your mode of burial before the Spaniards came among you? They answered, "We burnt our dead." Several others of the same place said the same thing. To the question, Do you know anything of Montezuma? the oldest two, as also several others, answered, "Not of ourselves, but the Spaniards told us about him. He is a Spanish god." On visiting a band of the same Indians living on the border of Lower California, and having with me a Spaniard as interpreter, on entering a house the first thing that he saw was a doll made of clay (Indian mothers make them for their children and burn them as they do earthen ware). He cried out, "There is Montezuma, the Indian's god." At this a venerable man rose up, and with anger in his face said, "No Indian god; Montezuma is Spanish god." On my questioning several of both sexes upon the same subject, all asserted that Montezuma was a Spanish and not an Indian god. Among the mission churches, rendered as attractive as possible to please the Indians, many strange customs and ceremonies crept into the form of worship. A special saint was created for the Indian's benefit, to watch over him. If he has benefited by all the church has done for him, then retrogression must have a new meaning. The influence of the church and the extensive system of intermarriage by the Spaniards have so changed both divisions of the race held under their dominion, that we have an amalgamated variety different from both and very inferior to either, especially to the Toltecs.

As to where the Indians came from that have in former days and do now live in the country acquired from Mexico I will not

say, but will only remark that the cremationists or Aztecs look like Japanese, while the Toltecs or burying Indians look more like Chinese, not only in similarity of features but in manners and customs. The reserved and uncommunicative disposition of both certainly indicate a common origin.

If a close study were instituted among all the present tribes of Indians in the United States and Mexico, proof would no doubt be adduced which would determine to which of the divisions they belong, the Toltec or Aztec, — if of pure blood or a mixture of the two ; and if inquiry were made as to the causes which led to the unity, it might also lead to the conclusion that all the tribes are offshoots of the two divisions. Certainly the Mandans and the so-called mound-builders belonged to the Toltec, while many of the Texas Indians appear to be Aztec in their origin. May not all American Indians be Chinese and Japanese under another name ?

The early Spaniards may be somewhat excused, perhaps, for many of their exaggerations. They themselves were not so advanced then in agriculture, architecture, and the domestic arts as they now are ; and when they beheld a strange land with a new people so advanced, they, comparing them with themselves, concluded that the Mexicans were a great people, as they were considering their surroundings and tools and materials to work with. They were great, both divisions of them. The fault was in exaggerating their wealth so as to be the gainers thereby, and making them out to be what they appear not to have been, idolaters, so that they might excite the zeal of a religious denomination to locate among them and to force upon them a new set of customs which would be the cause of their degeneration. It could scarcely be expected of the early historians that they would study the Indian character with the view of ascertaining the particular differences between them, as they were looking at them with a view to their own reward, and without any consideration of the Indian's material welfare or history. Whether Aztec or Toltec, by far the larger number soon became hewers of wood and drawers of water for the mission establishments or for a few Spaniards. The latter made wealth at the expense of the lives of thousands of Indians of both sexes, who were worked to death in mines, on farms, and in various occupations. The great aim of the rich was to be idle and to compel the poor to labor to make them rich.

The efforts of the missions were to have the rich subservient to them, so that nothing could be done by them without the sanc-

tion of the church. So the church owned the rich, and the rich owned the poor. Thus it was until Mexico became a republic and the church lost its power. Since the United States acquired that part of the country under consideration the Aztecs and Toltecs have been left to choose their own manners and customs, except those that have already become peons, who were under the authority of their owners, and so remained until after the late war, when the Congress of the United States passed a law abolishing peonage or servitude for debt.

The published accounts by the early Spanish historians have been copied by most modern historians as if they could be anything but inaccurate; few imply even doubt as to the truthfulness of the accounts. But if they had visited the country and seen the nature of the soil, the climate, and natural productions at the present time, and then looked back at the Indian without modern tools, machinery, domestic animals, modern fire-arms, clothing, and introduced grains, etc., and left out of sight the Europeans and their customs, the historians would have copied much less from old authorities. The actual condition of the Indian and his surroundings before he was at all tampered with by Europeans, when impartially viewed, will compel any one to adopt different conclusions from the old chroniclers.

Let us consider the descriptions of what they are pleased to call Montezuma's palaces and his entertainments of Cortez and his followers. There is scarce a European monarch that could produce more pomp and extravagance. Only contemplate the feasts of the reported magnitude gotten up by the Aztecs! They could not have had houses large enough, nor is it possible for a rude people with their native resources to have obtained the variety and quantity of articles said to have been used by the reputed Montezuma to feed the Spaniards; it would take but a short time to eat out an Indian community, with only their native mode of farming; it would require more executive ability than is generally possessed by even the smartest of the Toltecs, much less the Aztec Indians, to carry on an establishment of the character of that attributed to the so-called Montezuma. Consider what it must take to feed the army of servants he is said to have had; then the wealth he gave to the Spaniards and that they took by force. One can come to no other conclusion than that the Indians have sadly degenerated since that time, for they could not bring forth food or wealth at this day as they are said to have done at the conquest. There is something unnat-

ural in an Indian, however great he may be, having so great a number of followers about him. Indian men especially are so adverse to servitude that it is doubtful if so large a number could be held for that purpose ; they would revolt, and who could prevent it ? These volunteer servants would belong to almost as many different families, and it is nearly a universal fact that if one of a family is offended with any one the whole family take sides with him. An Indian's family comprises all his relations ; so all the relations and servants of the supposed Montezuma would form a powerful army to withstand.

To give a more truthful version would be simply to state that a large number of Aztec Indians lived in the city of Mexico at the time Cortez made his appearance. They were governed by a chief who had a few hangers-on, as all chiefs have ; generally his relations lived around him. Chiefs of both these divisions under consideration are required to procure their own provision, that is, his wives and children do. A chief is estimated by his wealth. I have never observed anything like tribute or taxes being collected by a chief. Presents are not only given but received by the chiefs.

One thing is certain : both the divisions of Indians when one dies let him be either burnt or buried ; everything that the dead possessed or his friends had, even to his clothing, is thrown upon him to be either consumed with him or be put with him in the grave. This is a great barrier to the accumulation of property, for not even money or ornaments, however valuable, are withheld from the dead. The living relatives march from the last resting-place of the dead or from their ashes with nothing. The dead have it all, and the living will not go near the spot again or mention the name of the dead ; it is so with both divisions. This would warrant the conclusion that they care not to convey events to history. A great deal is said about historical representations on rocks. I have seen the present Indians make representations on rocks like the so-called hieroglyphics, and I have invariably been told by them that they were made only for fun, and had no meaning.

It is very difficult to reconcile the accounts given of the people living in the city of Mexico at the time of Cortez's appearance with any of the present Indians. One of two conclusions may be adopted : if the people of the city of Mexico belonged to either of the two divisions of Indians, then there has been wonderful degeneration among them ; or possibly those found were a special

creation attended with all the wealth and display for the purpose of honoring the captors of Mexico, and destined to disappear as soon as the crafty conquerors had accomplished their object.

NOTES ON THE BREEDING HABITS OF THE GOLDEN-WINGED WOODPECKER.

BY DAVID A. LYLE, U. S. A.

ON the afternoon of May 6, 1877, as I was strolling among the trees in the lower part of the Armory grounds, at Springfield, Massachusetts, I heard the faint hammering of a woodpecker (*Colaptes auratus*). Listening intently for some moments to ascertain, if possible, the direction from whence the sounds came, I proceeded onward with the stealthy tread of the Indian, — learned long since in the wilds of the far West. After advancing in this noiseless manner for some rods, I again halted and turned my ear successively in different directions the better to catch the faint sounds made by the industrious feathered artisan. Again I heard the rapping, and satisfied that I was traveling in the proper course I advanced some distance farther in the same quiet manner, and upon listening attentively for about a minute I was rewarded by hearing the sounds much more plainly.

I now redoubled my caution, following the sound more and more slowly for fear of alarming the shy worker. At last, I directed my attention to three trees, in one of which I was convinced that the woodpecker was working. The muffled sounds indicated that the bird had already penetrated the trunk of the limb or tree in which the nest was to be made. Carefully I approached the first tree, and placing my ear in contact with the trunk I awaited a repetition of the hammering. Again I heard it, but no more audibly than before reaching the tree. I tried the second tree with better success, for by pressing my ear against the trunk I could hear the thumpings very distinctly indeed. Now I was sure that I had found my bird, which conclusion was strengthened by finding among the grass near the foot of the tree quantities of small, fresh chips which the bird had ejected from his newly located domicile.

These chips were scattered over quite an area in the vicinity of the tree. On stealthily retreating from the roots of the tree in the direction indicated by the chips, I saw the hole bored by the object of my search. It had been screened from my view